Space Weather Forecast

Issued on Friday, 28 June 2024 at 01:21 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate-class flares throughout. Chance of Active to G1 Minor Storm intervals days 1-2 (28-29 Jun).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low with occasional low level Common-class flares. There are now eleven regions on the disc, with the previously elongated and complex AR3723 region now reanalysed as two separate regions and subsequently re-classified, with the new AR3730 region constituting the previous leading portion of that group. AR3729 is now the most complex single region, located close to the east limb, but rotating into clearer view. All sunspots on the disc showing only very slow evolution over recent hours.

We await modeling output for a Coronal Mass Ejection (CME) observed leaving the Sun to the southwest, likely associated with a small flare from a region in the southwest approximately 27/1710UTC. Otherwise no likely Earth-directed CMEs were observed in available imagery.

Solar Wind / Geomagnetic Activity: Solar wind speeds were background, between 320-350 km/s on a flat trend. The Interplanetary Magnetic Field, Bt, was initially weak, but became persistently moderate from 27/0713 UTC, increasing to a peak around 27/1100 UTC. The important north-south component, Bz, varied weakly to start the period, but generally rotated to a moderately positive (northward) direction from 27/0630 UTC, before trending negative (southward) from approximately 27/1100UTC to become weakly negative. Geomagnetic activity was generally Quiet to Unsettled (Kp 1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) has remained at background levels with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity expected with a chance of isolated Moderate flares.

Solar Wind / Geomagnetic Activity: Three CMEs feature in the forecast period. The first from 23 Jun may be providing the current weak enhancement. The second from early on 25 Jun may have a glancing impact from later on day 1 (28 Jun). The third CME from late on 25 Jun may arrive late day 2 or early day 3 (29-30 Jun), but any impact is expected to be rather weak and slow. Otherwise, solar winds are expected to remain at generally background levels.

Geomagnetic activity is expected to be Quiet overall with Unsettled intervals, but increasing to Active to G1 Minor storm with any CME arrivals, most likely day 1-2 (28-29 Jun).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to remain at background levels, but with a very slight chance of exceeding the S1/Minor Storm threshold should any notable flares occur from the numerous sunspots that

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currently occupy the visible disc.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	30	40	20	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	40	40	40	40
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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